

## Chapter 1 The Basics

### OVERVIEW

The purpose of this chapter is to introduce basic anatomical terms and the physiological concept of homeostasis.

Chapter figures can be found in the Online Learning Center (OLC). Discussion points, group activities, and quizzes listed in the summary table below are explained under their individual outcomes following the table. Answer keys to the text chapter review questions, workbook concept maps, and workbook review questions are located at the end of this chapter.

A review guide is also available on the OLC. This guide lists all of the learning outcomes for the chapter and gives space for students to take notes and make sketches. This can be an important tool to encourage students to pay attention to what they are learning and to use to either take initial notes or to organize their existing notes before exams.

### COMPETENCY CORRELATION GRID

Learning Outcome	CAAHEP Competencies	ABHES Competencies
1.1 Define <i>Anatomy</i> and <i>Physiology</i>	I.C.1. Describe structural organization of the human body	3.b. Build and dissect medical terms from roots/suffixes to understand the word element combinations that create medical terminology
1.2 Describe the location of structures in the human body using anatomical terms of direction, regions, planes, positions, and cavities.	I.C.3. Describe body planes, directional terms, quadrants, and cavities	2.b. Identify and apply the knowledge of all body systems, their structure and functions, and their common diseases, symptoms and etiologies.
1.3 Locate serous membranes by their individual names and relative location to organs	I.C.3. Describe body planes, directional terms, quadrants, and cavities	2.b. Identify and apply the knowledge of all body systems, their structure and functions, and their common diseases, symptoms and etiologies.
1.4 Define <i>homeostasis</i> and explain why it is so important in human physiology	I.C.1. Describe structural organization of the human body	3.a. Define and use entire basic structure of medical words and be able to accurately identify in the correct context, i.e., root, prefix, suffix, combinations, spelling and definitions
1.5 Define <i>negative feedback</i> and <i>positive feedback</i> and explain their importance to	I.C.2. Identify body systems	2.b. Identify and apply the knowledge of all body systems, their structure and functions, and their

homeostasis		common diseases, symptoms and etiologies.
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**SUMMARY TABLE 1**

LEARNING OUTCOME	LECTURE OUTLINE	ACTIVITIES – TALKING POINTS	ASSESSMENTS
1.1 Define <i>anatomy</i> and <i>physiology</i> .	I. Overview: Define anatomy and physiology	<b>WkBk Concept maps:</b> <ul style="list-style-type: none"> <li>Homeostasis</li> </ul> Figure 1.10 (Homeostasis concept map)	<b>WkBk Review Questions:</b> <ul style="list-style-type: none"> <li>Completion: 5</li> </ul>
1.2 Describe the location of structures in the human body using anatomical terms of direction, regions, planes, positions, and cavities.	II. Anatomical terms <ul style="list-style-type: none"> <li>A. Anatomical terms of direction</li> <li>B. Anatomical regions</li> <li>C. Anatomical planes</li> <li>D. Anatomical positions</li> <li>E. Anatomical cavities</li> </ul> <b>Chapter Figures:</b> <ul style="list-style-type: none"> <li>1.1 (Standard anatomical position)</li> <li>1.2 (Sagittal view of the head)</li> <li>1.3 (Chest and abdominal organs)</li> <li>1.4 (Layers of the skin)</li> <li>1.5 (Anatomical regions)</li> <li>1.6 (Abdominal quadrants and</li> </ul>	<b>Talking Point:</b> Stress that all directional terms are in reference to the patient – not to you. Stress, that all terms mean the same thing regardless of the position the patient is in. Always think of the patient as being in the anatomical position.  <b>Discussion Point:</b> 1 (see below)  <b>Group activity</b> 1. (see below)  <b>WkBk Coloring Book:</b> <ul style="list-style-type: none"> <li>Figure 1.1 (Anatomical terms of direction)</li> <li>Figure 1.2 (Anatomical regions)</li> <li>Figure 1.3 (Anatomical planes)</li> <li>Figure 1.4 (Anatomical cavities)</li> </ul>	<b>Spot Check:</b> 1-2  <b>WkBk Review Questions:</b> <ul style="list-style-type: none"> <li>MS: 1-2</li> <li>Matching: 1-5</li> <li>Completion: 1-3</li> </ul>

	<p>nine regions of the abdomen)</p> <p>1.7 (Anatomical planes)</p> <p>1.8 (Body cavities)</p> <p><b>Tables:</b></p> <p>1.1 (Anatomical terms of direction)</p> <p>1.2 (Anatomical regions)</p> <p>1.3 (Anatomical planes)</p> <p>1.4 (Anatomical positions)</p> <p>1.5 (Anatomical cavities)</p>	<p><b>WkBk Lab exercises and activities:</b></p> <ul style="list-style-type: none"> <li>• Hand</li> </ul> <p>1. <b>Talking point:</b> Check for use of anatomical position</p> <p>Figure 1.5 (Hand with bones drawn on it)</p> <p><b>WkBk Lab exercises and activities:</b></p> <ul style="list-style-type: none"> <li>• Heart</li> </ul> <p>Figure 1.6 (Heart surgery)</p> <p><b>WkBk Concept maps:</b></p> <p>(For answers see below)</p> <ul style="list-style-type: none"> <li>• Figure 1.7 (Anatomical terms concept map)</li> <li>• Figure 1.8 (Anatomical regions concept map)</li> <li>• Figure 1.9 (Anatomical cavities concept map)</li> </ul>	
1.3 Locate serous membranes by their individual names and relative location to organs.	<p>F. Serous membranes</p> <p><b>Chapter Figures:</b></p> <p>1.9 (Water balloon)</p> <p>1.10 (Pericardial and pleural membranes)</p> <p>1.11 (Peritoneal membrane)</p> <p>1.12 (Anterior view of the abdominopelvic organs)</p> <p>1.13 (Anterior view of omentums and mesenteries)</p>	<p><b>Talking Point:</b> Serous membranes are introduced in this chapter as they relate to cavities. They will be covered in later chapters as they relate to physiology. For example, pleural membranes are explained more fully in Chapter 12 in relation to the mechanics of breathing.</p> <p><b>WkBk Lab exercises and activities:</b></p> <ul style="list-style-type: none"> <li>• Heart</li> </ul> <p>Figure 1.6 (Heart surgery)</p> <p><b>WkBk Concept maps:</b></p>	<p><b>Spot Check:</b> 3</p> <p><b>Quiz 1.1</b></p> <p><b>Learning Outcomes (LOs) 1.1-1.3</b> (see Outcome 1.3)</p> <p><b>WkBk Review Questions:</b></p> <ul style="list-style-type: none"> <li>• Critical thinking: 1</li> </ul>

		(For answers see below) <ul style="list-style-type: none"> <li>Figure 1.9 ( Anatomical cavities concept map)</li> </ul>	
1.4 Define <i>homeostasis</i> and explain why it is so important in human physiology.	III. Physiological terms A. Homeostasis	<b>WkBk Concept maps:</b> (For answers see below) <ul style="list-style-type: none"> <li>Figure 1.10 (Homeostasis concept map)</li> </ul>	<b>WkBk Review Questions:</b> <ul style="list-style-type: none"> <li>Completion: 4</li> </ul>
1.5 Define <i>negative feedback</i> and <i>positive feedback</i> and explain their importance to homeostasis.	1. Negative feedback 2. Positive feedback  <b>Chapter Figure:</b> 1.14 (Negative feedback mechanisms for blood sugar regulation)	<b>Talking Point:</b> The homeostasis icon (introduced in this section of the chapter) will appear throughout all of the chapters when topics directly relate to homeostasis.  <b>Discussion point 2.</b> (see below)  <b>Talking Point:</b> A thermostat in a home is a good example of negative feedback. As a room gets colder, the room's thermostat sends a message to the furnace to send more heat, which it does until the thermostat sends another message to stop. How would this work in the summer?  <b>Talking Point:</b> Draw representative examples of negative and positive feedback graphs on the board. The negative feedback would show a fluctuation in the data. The positive feedback would show a graph with a linear line going up and up and up (for example).	<b>Spot Check:</b> 4  <b>WkBk Review Questions:</b> <ul style="list-style-type: none"> <li>Critical thinking: 2</li> </ul>

## INDIVIDUAL OUTCOMES

### OUTCOME 1.2

#### Group Activity:

1. Divide the class into groups of 3, 4, or 5 students. Each student in the group should describe the location of a body structure using 3 anatomical terms not used by other members of the group. The group should compile a list of each member's contribution. When finished, each group exchanges their list with another group who checks the list for accuracy.

#### Discussion Point:

1. Case study: Draw 2 kidneys on the board as they would appear in the body. Shade in a spot on the upper right edge of the kidney on the left. Tell the students the drawing represents an X-ray of a patient sent to radiology because of a suspected kidney tumor. The X-ray is an anterior view of the abdomen. The shading represents a tumor. Ask the students to describe the location of the tumor, using anatomical terms.—Because this is an anterior view, the kidney on the left on the board would be the patient's right kidney (anatomical position), so the correct answer would be the superior, medial edge of the right kidney. Ask the students if they could place and describe a tumor differently.

**Spot Check 1:** How would you describe the location of your nose using at least three anatomical terms?

*Answers may vary. Your nose is on the anterior surface of your head, superior to your mouth, and medial and inferior to your eyes.*

**Spot Check 2:** Describe the location of liver pain by specific abdominal region in two different ways.

*Answer: The liver is in the right upper quadrant. The liver is in the right hypochondriac and epigastric regions.*

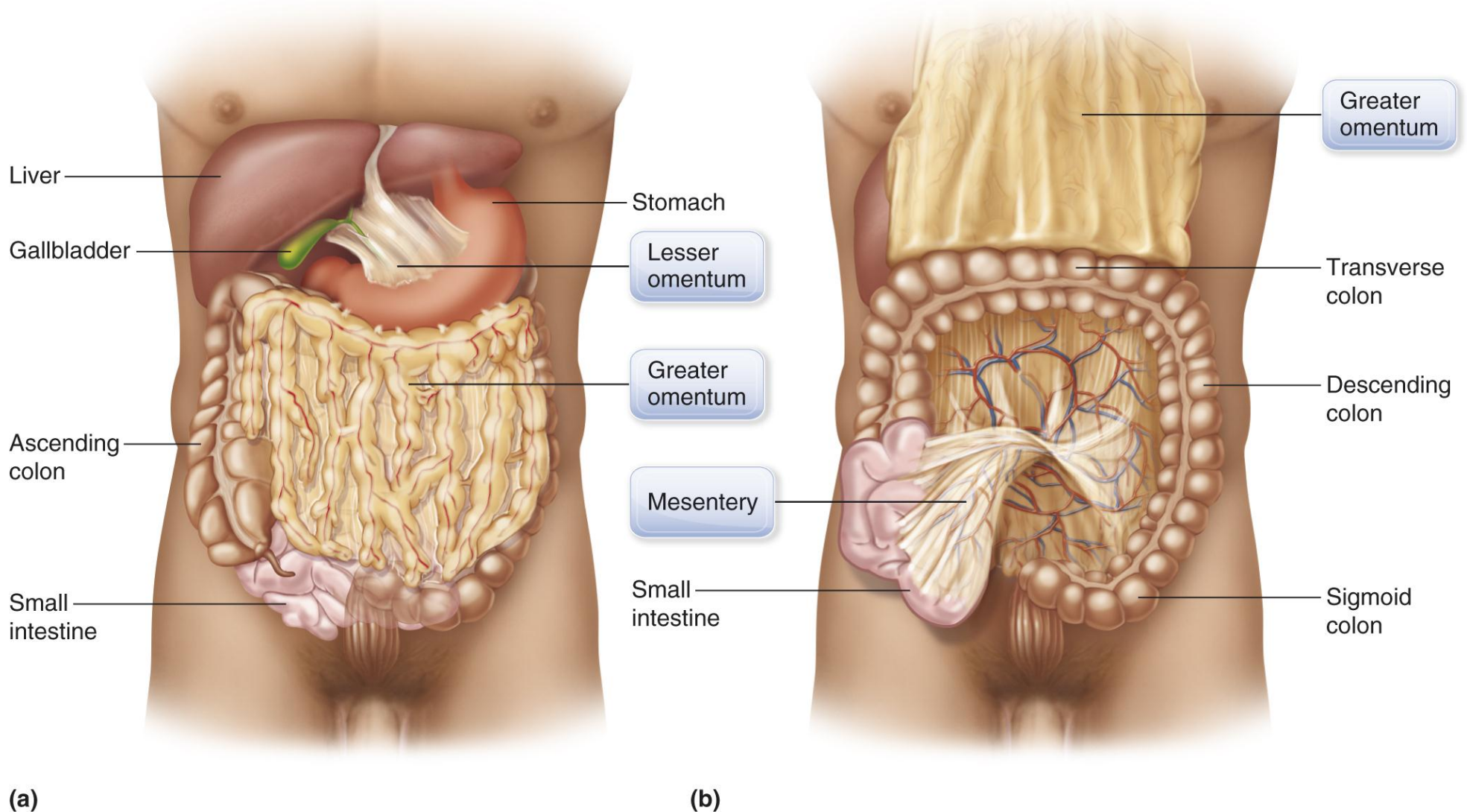
### OUTCOME 1.3

**Spot Check 3:** What specific serous membrane is attached to the inferior surface of the diaphragm? What specific serous membrane(s) is (are) attached to the superior surface of the diaphragm?

*Answer: The parietal peritoneum is attached to the inferior surface of the diaphragm. The parietal pleura membrane is attached to the superior surface of the diaphragm.*

IM Ch 1  
Quiz 1.1

Use Text Figure 1.13 for this quiz.



## IM Ch 1

1. In what cavity are the organs shown here located? *Answer: abdominal or abdominopelvic.*
2. The lesser and greater omentums, and the mesentery are shown here. Of what membrane are they an extension? *Answer: The peritoneum.*
3. Where is gallbladder in relation to the liver? *Answer: Inferior*
4. In what quadrant is the sigmoid colon located? *Answer: LLQ*
5. What other term can be used to describe the region location of the sigmoid colon? *Answer: Left inguinal region*
6. What view is represented in this figure? *Answer: Anterior*
7. Where is the transverse colon in relation to the greater omentum? *Answer: Deep*
8. Along what plane would a cut have to be made to offer this view? *Answer: Frontal or coronal*
9. On what side of the body is the stomach located? *Answer: Left*
10. What is the term for the study of these structures? *Answer: Anatomy*

## OUTCOME 1.5

### Discussion Point:

2. Several examples of negative feedback have been discussed (in the chapter and Talking Point). Ask the students to think of another example of negative or positive feedback in their homes.

**Spot Check 4:** It is 90 degrees and sunny. You are wearing your cap and gown for graduation. You want to look your best for the outdoor graduation photos, but you are sweating profusely. Is the production of sweat a negative or positive feedback mechanism?

*Answer: Negative feedback.*

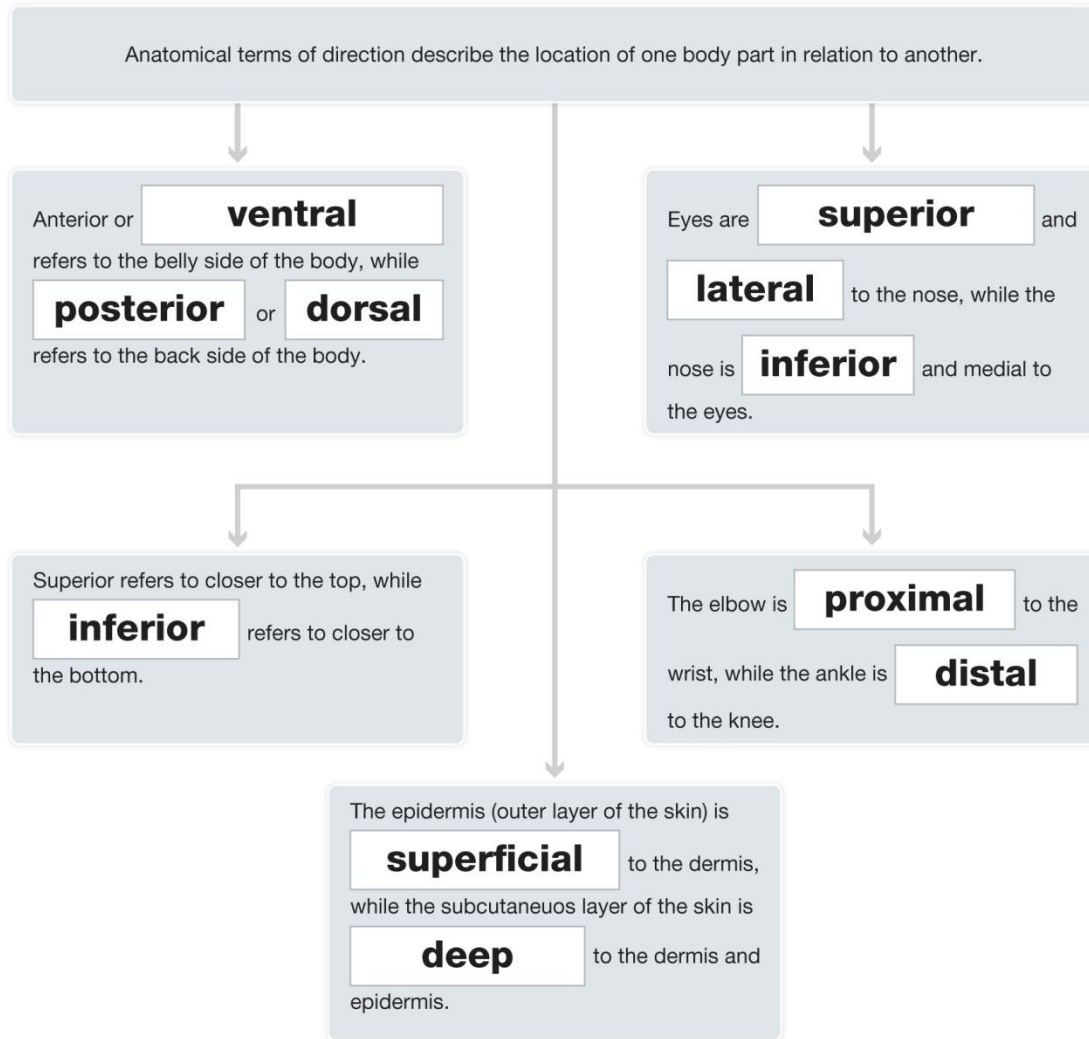
**ANSWER KEYS**

**Chapter Review Questions**

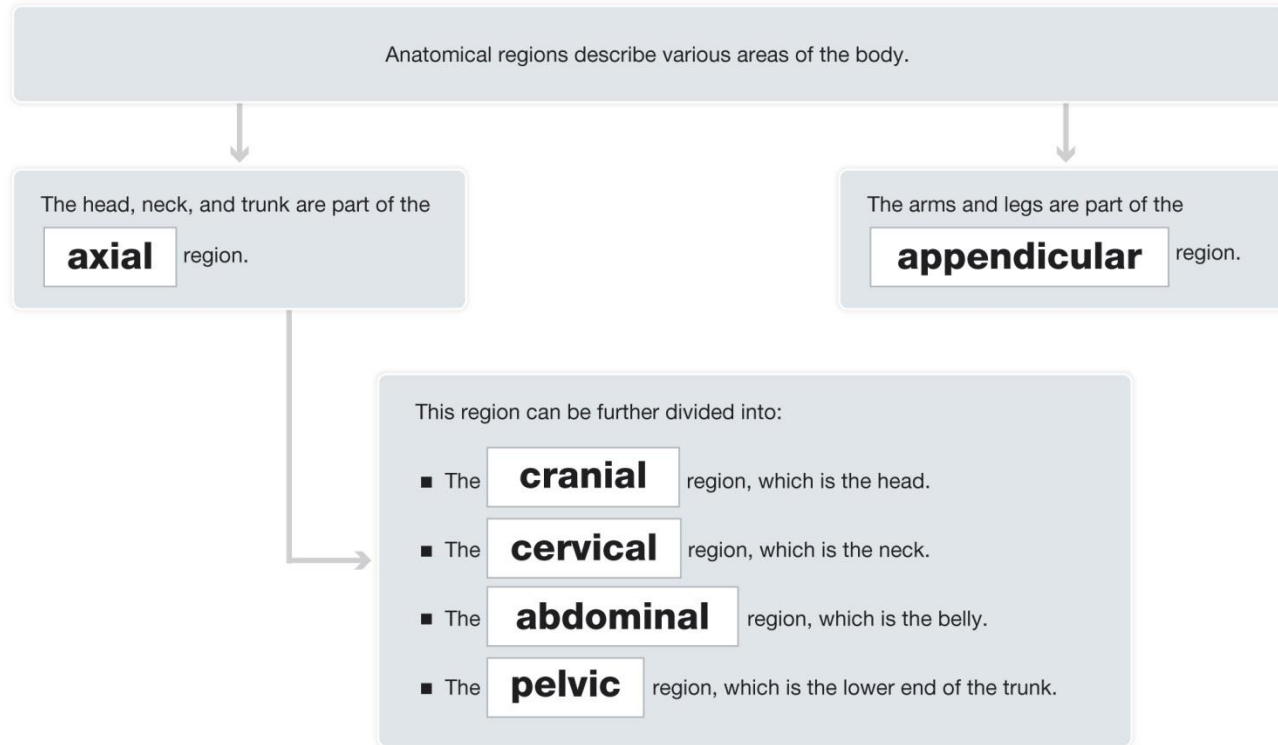
1. D
2. D
3. C
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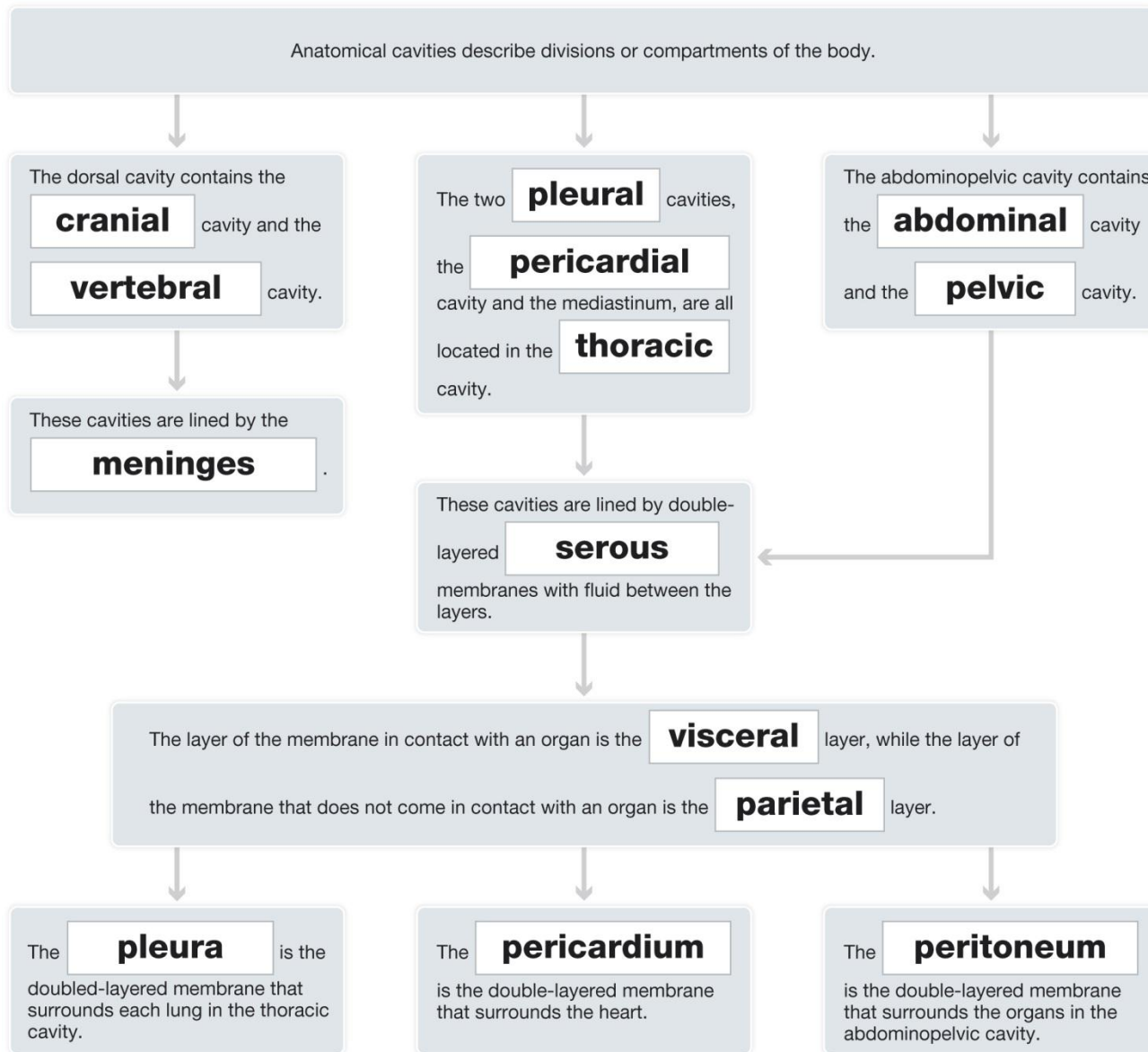


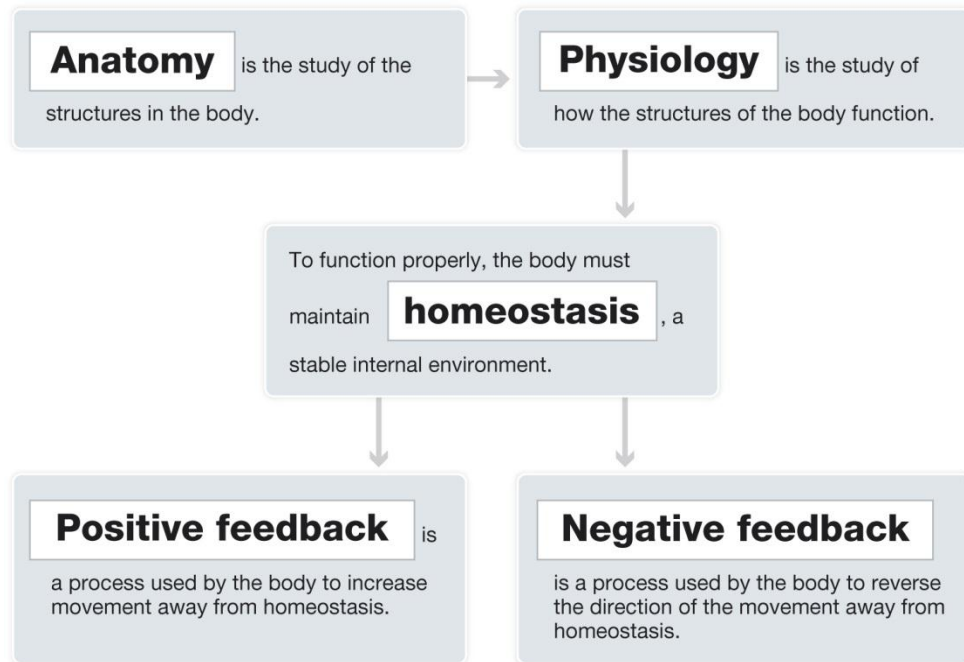
Anatomical Terms



## Anatomical regions







**Workbook Chapter Review Questions**

**Multiple Select:** Select the correct choices for each statement. The choices may be all correct, all incorrect, or any combination of correct and incorrect.

1. Which of the following statements use(s) anatomical terms of direction correctly?

A. The anterior surface of the arm has the most hair.

B. The liver is distal to the diaphragm.

C. The elbow is superior to the wrist.

*D. The cubital region is proximal to the carpal region.*

*E. The esophagus is posterior to the heart.*

2. Which of the following statements is (are) correct concerning anatomical regions?

*A. The plantar region is part of the appendicular region.*

B. The palmar region is part of the axial region.

*C. The abdominal region is superior to the pelvic region.*

D. The pelvic region is part of the appendicular region.

*E. The cranial region is superior to the cervical region.*

IM Ch 1

**Matching:** Match the organ to the cavity in which it is located.

- |                                |           |
|--------------------------------|-----------|
| <u>C</u> 1. Pleural cavity     | A. Uterus |
| <u>D</u> 2. Pericardial cavity | B. Brain  |
| <u>E</u> 3. Abdominal cavity   | C. Lung   |
| <u>A</u> 4. Pelvic cavity      | D. Heart  |
| <u>B</u> 5. Cranial cavity     | E. Liver  |

**Completion:** Complete the following statements. Use a term for an anatomical plane to complete the following statements concerning the cadaver images in Figures 1.11-1.13.

1. The body in Figure 1.11 was cut along a Transverse plane.
2. The body in Figure 1.12 was cut along a Frontal/Coronal plane.
3. The body in Figure 1.13 was cut along a Sagittal plane.
4. The definition of homeostasis is: The maintenance of a stable internal environment in which the body functions best.
5. The definition of physiology is: The study of how structures in the body function.

**Critical Thinking:**

1. An arrow entered the left axillary region of a hunter and lodged in his heart. List in order the layers of serous membrane the arrow would have pierced. (Hint: You may want to sketch the arrow entering the thorax, and the relative serous membranes.)

*Answer: The arrow would have pierced the parietal pleura, and then the visceral pleura before entering the left lung, then the visceral pleura, the parietal pleura, the parietal pericardium, and the visceral pericardium before entering and lodging in the heart.*

2. A patient comes to the emergency room with an elevated heart rate and a low blood pressure that continues to fall. He is diagnosed as having a bleeding ulcer. The bleeding is stopped with medical intervention and he is given a blood transfusion. His heart rate and blood pressure return to normal. What homeostatic feedback mechanisms, if any, are evident in this situation?

*The bleeding of the ulcer caused the blood pressure to fall. The heart responded by beating faster to create more blood pressure (negative feedback). This however, caused more bleeding, which lowered the blood pressure even further (positive feedback). All of this reinforces that negative feedback mechanisms sometimes require medical intervention to return the body to homeostasis.*

**Case Study:**

The bleeding of the ulcer caused the blood pressure to fall. The heart responded by beating faster to create more blood pressure (negative feedback). This however, caused more bleeding, which lowered the blood pressure even further (positive feedback). All of this reinforces that negative feedback mechanisms sometimes require medical intervention to return the body to homeostasis.